

Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-21 and 23-25 are pending in the application, with claims 1, 10, 19, 20, 23, and 25 being the independent claims. Claims 1, 6, 10, 19-21, 23 and 25 are sought to amended. Claim 22 is sought to be cancelled without prejudice to or disclaimer of the subject matter recited therein. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Claim Objections

The Examiner has objected to claim 21 because a period was missing from the end of the claim sentence. Applicants have amended claim 21, in part, to add a period at the claim sentence. Accordingly, Applicants respectfully request that the objection to claim 21 be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 112

The Examiner has rejected claim 6 under 35 U.S.C. § 112, second paragraph, as indefinite because the language "said linear" in line 6 of the claim has insufficient

antecedent basis. Applicants have amended the cited claim language to recite "said linear amplifier." Applicants submit that this amendment corrects any antecedent basis problem with claim 6, and therefore respectfully request that the rejection of claim 6 under 35 U.S.C. § 112 be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 103

The Examiner has rejected claims 1-25 under 35 U.S.C. § 103(a). For the reasons set forth below, Applicants respectfully traverse.

Rejection of Claims 1, 10, 19, 23 and 25 under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1, 10, 19, 23, and 25 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,658,108 to Bissell *et al.* ("Bissell") in view of U.S. Patent No. 3,334,293 to Schultz ("Schultz") in view of U.S. Patent No. 5,619,080 to Pennington *et al.* ("Pennington") and further in view of U.S. Patent No. 5,649,006 to Koizumi. Each of these claims, as currently amended, recites a system or method for "supplying power over a home phone line network in a manner that is interoperable with Plain Old Telephone Service (POTS) and Home Phoneline Network Alliance (HPNA) services operating on the same home phone line network" that involves generating "an AC signal with a fundamental frequency spectrally centered between 20 kHz and 200 kHz" and band pass filtering the AC signal to remove "undesired harmonics" from the AC signal.

The Examiner has admitted that Bissell does not teach the generation of an AC signal having "a fundamental frequency spectrally centered between 20 kHz and 200 kHz" as recited by claim 1. *See* Office Action at p. 3. This feature is also not taught or suggested by any of the other prior art of record. However, the Examiner states that the generation of such a signal would have been obvious to one of ordinary skill in the art because (1) Applicants have not disclosed "that such a spectral arrangement provides an advantage, is used for a particular purpose, or solves a stated problem"; and (2) "one of ordinary skill in the art . . . would have expected [A]pplicant's invention to perform equally well with a spectral center of 100 Hz as disclosed by Bissell, because as long as the center is out-of-band, the function of the AC generator is the same." *See* Office Action at p. 3. Each of these points will now be addressed in detail.

With regard to the first point, Applicants *have* disclosed that the spectral arrangement "provides an advantage, is used for a particular purpose, and solves a stated problem." Namely, the purpose and advantage of using an AC signal having "a fundamental frequency spectrally centered between 20 kHz and 200 kHz" is that it permits power to be supplied over a home phone line network in a manner that is interoperable with both Plain Old Telephone Service (POTS) and Home Phoneline Network Alliance (HPNA) services operating on the same home phone line network. As discussed in the specification of the present application at paragraphs [0057] - [0058]:

Where an AC signal is used, several issues are relevant. Both the spectral centering of the fundamental AC signal and its harmonics are of primary concern because of potential interference with the POTS voice band and the HPNA band on the shared phone line.

In particular, the power signal must not interfere with the POTS voice band, (<4 KHz) or metering bands (12 KHz/16 KHz) for international applications, as well as the HPNA band ($4 \text{ MHz} < f < 10 \text{ MHz}$). To

ensure that the AC signal generated by the AC signal generator 302 does not interfere with these bands, embodiments of the present invention utilize an AC signal generator 302 that generates an AC signal centered somewhere above 20 KHz and below approximately 200 KHz.

Thus, at least one problem addressed by the use of an AC signal having a "a fundamental frequency spectrally centered between 20 kHz and 200 kHz" is avoiding interference between the AC signal and its harmonics and the POTS voice band the HPNA band on a shared home phone line network. In this regard, each of claims 1, 10, 19, 23, and 25 have been amended to recite a method or system for "supplying power over a home phone line network in a manner that is interoperable with Plain Old Telephone Service (POTS) and Home Phoneline Network Alliance (HPNA) services operating on the same home phone line network."

With regard to the second point, one of ordinary skill in the art would *not* have expected Applicant's invention to perform equally well with a spectral center of 100 Hz as disclosed by Bissell" as argued by the Examiner. Bissell teaches providing an AC power signal below the POTS band (defined by Bissell as between 400 Hz and 3.4 kHz) on a premises network. However, as set forth in the specification of the present application, interference with the POTS band may result from not only the AC signal itself, but from harmonics thereof:

Both the spectral centering of the fundamental AC signal *and its harmonics* are of primary concern because of potential interference with the POTS voice band and the HPNA band on the shared phone line.

* * *

As can be seen in the chart 500, the POTS service, represented by line 502, dominates the lower frequencies, while the HPNA service, marked by the line 512, dominates the higher frequencies. Thus, in accordance with embodiments of the present invention, the desired power signal *and its harmonics* will not interfere with either of these bands. Here, the AC power signal, marked as the line 504, is centered at

approximately 150 kHz. In addition, the harmonics of the AC power signal are also marked as lines 506, 508 and 510.

See Specification, ¶¶ [0057], [0064]. Bissell does not take into account the potential for interfering harmonics and thus places the AC signal below, but very near to, the lower end of the voice band (400 Hz as defined by Bissell). In contrast, embodiments of the present invention generate an AC power signal that is spectrally centered between 20 kHz and 200 kHz, thereby taking advantage of the large frequency gap between the POTS band and the HPNA band to accommodate undesired harmonics. Thus, to the extent that Bissell teaches placing an AC power signal below the POTS band on a premises network, it teaches away from the invention as claimed.

Furthermore, to the extent Bissell teaches placing an AC power signal in *any* frequency band other than the POTS band on a premises network, it also teaches away from the present invention. For example, such a signal could be placed in the HPNA band, thereby creating an interference problem that is sought to be avoided by the claimed invention. Also, as set forth in the specification of the present application, placing such a signal in a frequency band higher than the HPNA band reduces the power delivery capability of a transmission system:

Placing the AC power spectrum at a very high frequency above the HPNA band is less desirable because it reduces the power delivery capability of the transmission system. This is because losses in the cable and radiated emissions (radio frequency interference) are directly proportional to the frequency.

See Specification at ¶ [0058].

Thus, there is nothing in Bissell, or in any of the other prior art of record, that teaches or suggests the particular solution of generating an AC power signal having a fundamental frequency spectrally centered between 20 kHz and 200 kHz to ensure

interoperability with both POTS and HPNA services. Consequently, these references, alone or in combination, fail to render claims 1, 10, 19, 23 and 25 obvious under 35 U.S.C. § 103(a). Accordingly, Applicants respectfully request that the rejections of claims 1, 10, 19, 23 and 25 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

The Examiner has also conceded that Bissell does not teach band pass filtering the generated AC signal to remove unwanted harmonics as recited in claims 1, 10, 19, 23, and 25. *See* Office Action at p. 4. The Examiner argues that Schultz provides the missing teaches because "Schultz teaches that when multiplying a frequency to be delivered to a load, it is necessary to filter out all frequencies that will not be powering the load . . . using a band pass filter," citing to Schultz at column 1, lines 16-28 and FIG. 1, filters 9 and 11. Applicants respectfully disagree with this characterization of Schultz. Schultz merely teaches using a band pass filter and a band rejection filter to tune an output circuit to the output frequency of a frequency multiplier. *See* Schultz, col. 1, ll. 55-58, col. 1, l. 72-col. 2, l. 5, col. 2, ll. 27-35. Schultz does not teach or suggest that the output of the frequency multiplier is used to power the output circuit; rather, Schultz is silent as to what the frequency multiplier output is used for. Thus, Schultz does not teach or suggest that the use of a band pass filter "is necessary to filter out all frequencies that will not be **powering the load**" as asserted by the Examiner.

Furthermore, even if Schultz did teach that "when multiplying a frequency to be delivered to a load, it is necessary to filter out all frequencies that will not be powering the load . . . using a band pass filter" as suggested by the Examiner, there would be no motivation to combine the band pass filter of Schultz with the power distribution system of Bissell. Schultz is directed to frequency multipliers, not to AC power signal generators. Moreover, Bissell fails to recognize that an AC power signal may generate

unwanted harmonics, and thus places an AC power signal below, but very near to, the lower end of the POTS band on a premises network, as discussed above. Because Bissell does not recognize the potential for interfering harmonics, Bissell teaches away from the use of a band pass filter as claimed, and thus teaches away from a combination with Schultz.

For these additional reasons, Applicants submit that the cited references, alone or in combination, do not render claims 1, 10, 19, 23 and 25 obvious under 35 U.S.C. § 103(a) and respectfully request that the rejections of claims 1, 10, 19, 23 and 25 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Rejection of Claims 2-9, 11-18 and 24 under 35 U.S.C. § 103(a)

The Examiner has also rejected claims 2-9, 11-18, and 24 under 35 U.S.C. § 103 as obvious over various combinations of prior art references including Bissell and Schultz. For the reasons set forth above, none of the prior art of record, alone or in combination, renders independent claims 1, 10, 19, 23 and 25 obvious. Since claims 2-9 depend from claim 1, claims 11-18 depend from claim 10, and claim 24 depends from claim 23, they are also nonobvious for the same reasons. Accordingly, Applicants respectfully request that the rejections of claims 2-9, 11-18 and 24 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Rejection of Claims 20-22 under 35 U.S.C. § 103(a)

The Examiner has also rejected claims 20 and 22 under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 6,580,710 to Bowen ("Bowen") in view of Bissell, and claim 21 under 35 U.S.C. § 103(a) as obvious over Bowen in view of Bissel and further in view of U.S. Patent No. 6,477,249 to Williamson ("Williamson").

Claim 20, as currently amended, recites "a residential gateway for providing power over a home phone line network in a manner that is interoperable with Plain Old Telephone Service (POTS) and Home Phoneline Network Alliance (HPNA) services operating on the same home phone line network" that includes a power supply that "supplies an AC power signal with a fundamental frequency spectrally centered between 20 kHz and 200 kHz over the home phone line network." As discussed above in reference to claims 1, 10, 19, 23, and 25, none of the prior art of record, alone or in combination, teaches or suggests the particular solution of generating an AC power signal having a fundamental frequency spectrally centered between 20 kHz and 200 kHz to ensure interoperability with both POTS and HPNA services. Consequently, these references, alone or in combination, fail to render claim 20 obvious under 35 U.S.C. § 103(a). Accordingly, Applicants respectfully request that the rejection of claim 20 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Since claim 21 depends from claim 20, it is nonobvious for the same reasons as stated above for claim 20. Claim 22 has been cancelled without prejudice or disclaimer, thereby rendering the rejection of that claim moot. Accordingly, Applicants respectfully request that the rejections of claims 21 and 22 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

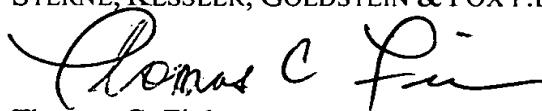
Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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